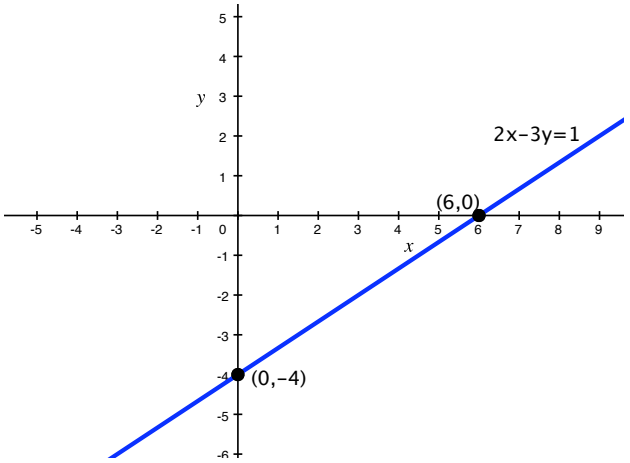
Math 80 Quiz #3 Solutions

1. **x-intercept:** Plug in $y = 0 \quad \Rightarrow \quad 2x - 3(0) = 12 \quad \Rightarrow \quad 2x = 12 \quad \Rightarrow \quad x = 6$

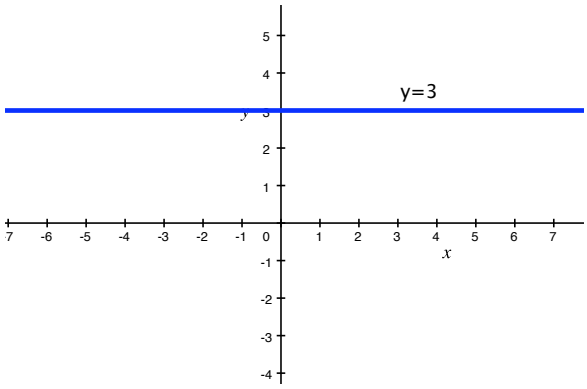
   So, the x-intercept is $(6, 0)$.

   y-intercept: Plug in $x = 0 \quad \Rightarrow \quad 2(0) - 3y = 12 \quad \Rightarrow \quad -3y = 12 \quad \Rightarrow \quad y = -4$

   So, the y-intercept is $(0, -4)$.



2. (a) The graph will be a horizontal line that goes through points with y-coordinate of 3.



   (b) You can pick two points on the line and calculate the slope between the points. Using this method, you will get that the slope is 0. Since the line is horizontal, you can also just state that the slope is 0.

3. Grade $= \frac{\text{rise}}{\text{run}} = \frac{16}{40} = \frac{2}{5} = 0.4 = 40\%$

   The grade of the road is 40%.

4. Slope of Line 1 $= \frac{\text{vertical change}}{\text{horizontal change}} = \frac{5-(-2)}{-1-(-3)} = \frac{5+2}{-1+3} = \frac{7}{2}$

   (Note: You will get the same result if you calculate the slope of line 1 this way: Slope $= \frac{-2-5}{-3-(-1)}$)

   Slope of Line 2 $= \frac{2-0}{-7-0} = -\frac{2}{7}$

   Since the lines have slopes that are negative reciprocals, they are perpendicular.